

REMARKS

I. Status of Claims

Claims 1, 8 and 9 are currently amended, claims 11 and 13-14 are canceled and new claim 23 has been added in the instant amendment. Claim 1 is currently amended to remove the possibility of X being chlorine and to incorporate the limitations of canceled claim 11. Claims 5-7 were previously canceled in the amendment filed March 29, 2005. Upon entry of this amendment, claims 1-4, 8-10, 12 and 15-23 are pending.

II. Claim Objections

The Examiner has objected to claim 13 because it depends from canceled claim 7. This objection is moot due to the cancellation of claim 13 in the instant amendment.

III. The rejection of claims 1-4 and 8-14 under 35 U.S.C. § 102(b) should be withdrawn

The Examiner has rejected claims 1-4 and 8-14 under 35 U.S.C. § 102(b) as allegedly being anticipated by Japanese Patent Publication No. JP 11-80708A (Suzumura). In response, claims 1, 8 and 9 have been amended and claims 11 and 13-14 have been canceled. Applicants respectfully submit that this amendment overcomes the anticipation rejection based upon Suzumura for the following reasons.

Under MPEP § 2131,

[t]o anticipate a claim, the reference must teach every element of the claim. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

Citing, Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Suzumura discloses a composition for polishing silicon-dioxide serving as an insulator layer, containing (1) water, (2) abrasive, (3) at least one anion selected from the group consisting of perchloric acid (HClO₄), chloric acid (HClO₃), chlorous acid (HClO₂)

and hydrochlorous acid, and (4) at least one cation selected from the group consisting of ammonium ion, alkali metallic ion and alkaline earth metallic ions.

Amended claim 1 provides a CMP slurry composition for oxide film and polysilicon layer with a pH ranging from 2 to 5 comprising an HXO_n compound (wherein X is selected from the group consisting of fluorine and bromide, and wherein n is an integer from 2 to 4) and a method for forming a metal line contact plug using the same. Amended claim 1 is limited to an additive that is an HXO_n compound where X can only be fluorine or bromide. The anions disclosed in Suzumura are selected from the group consisting of perchloric acid (HClO_4), chloric acid (HClO_3), chlorous acid (HClO_2) and hydrochlorous acid. Suzumura does not teach or suggest using a HFO_n or HBrO_n compound recited by amended claim 1. Therefore, Suzumura clearly does not teach or suggest every claim limitation of amended claim 1, and dependent claims 2-4 and 8-10. Thus the anticipation rejection is improper and must be withdrawn.

IV. The rejection of claims 15, 16 and 19 under 35 U.S.C. § 103(a) should be withdrawn

The Examiner has rejected claims 15, 16 and 19 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,060,783 ("Juengling") in view of Suzumura. However, claims 15, 16 and 19 all depend directly or indirectly from allowable claim 1. Juengling does not teach or suggest using a CMP composition containing HFO_n or HBrO_n compounds, to which amended claim 1 is limited. As noted above, neither does Suzumura. Therefore, no combination of Juengling and Suzumura can serve as an obviousness rejection for any claim that depends from claim 1 because, under MPEP §§ 2142 and 2143,

[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.

Citing, In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991); *see also* MPEP § 2143-§ 2143.03 for decisions pertinent to each of these criteria.

No combination of Juengling and Suzumura teaches or suggests all of the limitations of the claims and there is no teaching or suggestion in either Juengling or Suzumura to expand the list of additives of Suzumura to include the novel use of the HFO_n or HBrO_n recited in amended claim 1 for (1) a pH control agent to increase the polishing selectivity ratio of nitride and to decrease the polishing selectivity ratio of oxide as well as (2) an oxidant to increase the polishing speed of silicon.

Therefore, no combination of these references teaches or suggests every element of the slurry of amended claim 1 or the use of that slurry as recited in claim 15. Therefore, claims 16 and 19 which are dependent upon claim 15, which is dependent upon claim 1 are all allowable over any combination of Juengling and Suzumura and therefore the obviousness rejection of claims 15, 16 and 19 is improper and should be withdrawn.

V. The rejection of claims 17 and 21 under 35 U.S.C. § 103(a) should be withdrawn

The Examiner rejected claims 17 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Juengling, Suzumura and further in view of U.S. Patent No. 5,877,052 ("Lin"). However, neither Juengling nor Lin teach or suggest the HXO_n compounds required by amended claim 1. Lin does not teach or suggest any slurry compositions. Suzumura is limited to an anion containing a chlorine ion (i.e., perchloric acid (HClO_4), chloric acid (HClO_3), chlorous acid (HClO_2) and hydrochlorous acid) and does not teach or suggest using an HFO_n or HBrO_n recited by amended claim 1 for a pH control agent to increase the polishing selectivity ratio of nitride and to decrease the polishing ratio of oxide as well as an oxidant to increase the polishing speed of silicon. Therefore, no combination of these references teaches or suggests every element of the slurry of amended claim 1 or the use of that slurry as recited in amended claim 15. Therefore, claims 17 and 21 which are dependent upon claim 15, which is dependent upon claim 1 are all allowable over any combination of Juengling, Suzumura and Lin and therefore the obviousness rejection of claims 17 and 21 is improper and should be withdrawn.

VI. The rejection of claim 18 under 35 U.S.C. § 103(a) should be withdrawn

The Examiner rejected claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Juengling, Suzumura and further in view of U.S. Patent No. 5,994,232 ("Clampitt"). However, Clampitt is merely cited for the proposition that it teaches word line spacers. Clampitt does not teach or suggest the HXO_n family of compounds where X is F or Br as required by amended claim 1. Neither does Juengling nor Suzumura. Therefore, no combination of these three references teaches or suggests the slurry of claim 1, the method of using that slurry of claim 15 (which is limited to the slurry of claim 1) and therefore the obviousness rejection of dependent claim 18 based upon the combination of Juengling, Suzumura and Clampitt is improper and should be withdrawn.

VII. The rejection of claim 20 under 35 U.S.C. § 103(a) should be withdrawn

The Examiner rejected claim 20 under 35 U.S.C. § 103(a) as being unpatentable over Juengling, Suzumura and further in view of U.S. Patent No. 6,033,962 ("Jeng"). However, Jeng is only cited for the proposition of the specific etching gases. Jeng does not teach or suggest HXO_n compounds for polishing slurries. Therefore, Jeng does not teach or suggest the family of pH adjusters and oxidants required by amended claim 1 and, as noted above, neither does Suzumura or Juengling. Therefore, no combination of these three references teaches or suggests the slurry of claim 1, the method of using the specific slurry of claim 1 as recited in claim 15 or dependent claim 20 which depends from claim 15. Therefore, the obviousness rejection of claim 20 based upon Juengling, Suzumura and Jeng is improper and should be withdrawn.

VIII. The rejection of claim 22 under 35 U.S.C. § 103(a) should be withdrawn

The Examiner rejected claim 22 under 35 U.S.C. § 103(a) as being unpatentable over Juengling, Shemo and further in view of U.S. Patent No. 5,142,828 ("Curry"). However, Curry merely teaches the use of hard pads and does not teach or suggest the pH adjusters and oxidants required by amended claim 1 or the use of the slurry of claim 1 as recited by claim 15. Because claim 22 depends from allowable claim 15 and allowable claim 1, applicants respectfully submit that the rejection of claim 22 as being obvious in view of Juengling, Suzumura and Curry is improper and should be withdrawn.

CONCLUSION

In short, Suzumura is deficient as a base reference because it does not teach or suggest the family of additives, HXO_n , where X is fluorine or bromide which serves (1) as a pH control agent to increase the polishing selectivity ratio of nitride and to decrease the polishing selectivity ratio of oxide and (2) as an oxidant to increase the polishing speed of silicon as explained on pages 4 and 5 of the present application. Instead, Suzumura is limited to compounds containing chlorine and clearly does not teach or suggest the compounds and their benefits as provided by this disclosure. Therefore, Suzumura cannot serve as an anticipating reference or an adequate base reference for amended claim 1. Because none of the other references are directed to CMP slurries, none of the other references can be combined with Suzumura to establish a *prima facie* case of obviousness for amended claim 1.

For the foregoing reasons, the Applicant requests that all rejections be withdrawn and the application be allowed.

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Respectfully submitted,

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